Title
FRENCH WINE EXPORTS, 1849-1938: A GRAVITY MODEL APPROACH

I want to submit an abstract for:
Conference Presentation

Corresponding Author
Vicente Pinilla

E-Mail
vpinilla@unizar.es

Affiliation
University of Zaragoza

Co-Author/s

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maria Isabel Ayuda</td>
<td><a href="mailto:mayuda@unizar.es">mayuda@unizar.es</a></td>
<td>University of Zaragoza</td>
</tr>
<tr>
<td>Hugo Ferrer</td>
<td><a href="mailto:hufperper@gmail.com">hufperper@gmail.com</a></td>
<td>University of Zaragoza</td>
</tr>
</tbody>
</table>

Keywords
Wine Trade, French Wine Exports, Gravity Models

Research Question
To find the determinants of the evolution of French wine exports for the period 1849-1938

Methods
Econometric Gravity Models

Results
Not yet available

Abstract
France was the first producer of wine in the world since mid-nineteenth century until World War II (Pinilla and Ayuda, 2002). Wine consumption was high in that country, and substantially increased until 1938, due to the increase of population income (Ayuda, Aparicio and Pinilla, 1998). Throughout the period 1849-1938, while most of the French production went to supply the domestic market, exports, which had a long historical tradition, represented a significant share of its production, especially in the high quality segment. Consequently, the value of those wines coming out to foreign markets was high.

The increasing integration of international markets, that took place since the first third of the nineteenth century, the first wave of globalization, also deeply affected the wine. Some growth in consumption in northern European countries advancing solidly in their industrialization process, the process of tariff liberalization and the falling transport costs led to new opportunities. French exporters took advantage of these new conditions by increasing sales significantly. However, the arrival of the phylloxera plague in France created a serious crisis into the French
The destruction of almost all the vines and the need to replanting with American rootstock vines, immune to this plague, demanded a sharp increase in wine imports from abroad, both to meet French consumption and to avoid a complete collapse of its exports. Spain was the country that most benefited from the opportunity to sell their wines in France and took advantage of the reduction in exports from this country, trying to replace it in some markets. French vineyard replanting allowed, since the early twentieth century, to recover export capacity, but the following decades were marked by the enormous instability of French wine sales abroad for several reasons. First, the fact that wine does not end up becoming, before the Second World War, in a mass consumer product outside the northern shores of the Mediterranean or among migrant populations from this origin in overseas, limited the export possibilities of ordinary wine. However, the adoption of high-quality wine consumption by the economic elites of high-income meant good opportunities for the producers of this type of wine, as happened to sparkling wines of Champagne. Second, World War I and later the 1929 crisis severely affected international trade producing a significant fall in French wine exports.

In this context, the objective of this work is to find the determinants of the evolution of French wine exports for the period 1849-1938. To do this and, following Feenstra et al. (1998 and 2001) and Schumacher and Siliverstovs (2006), we use a gravity equation à la Bergstrand (1989) that includes “multilateral resistance” as suggested by Anderson and van Wincoop (2004), to examine the principal causes underlying the evolution and changes in the directions of French wine exports. In addition to specifying a model of bilateral trade for the whole of French wine exports, we propose six additional models that take into account the quality and region of origin of wine exports: Gironde (Bordeaux) wine in bottles, Gironde wine in barrels, Champagne wine, liquor wine, rest of France wine in bottles and rest of France wine in barrels.

Applying logarithms, the functional form of the models is:

\[
\ln X_{ijt} = \beta_1 + \beta_2 \ln (Y_{it}) + \beta_3 \ln (Y_{jt}) + \beta_4 \ln (Y_{pcpit}) + \beta_5 \ln (Y_{pcpjt}) + \\
+ \beta_6 \ln Dist_{ij} + \beta_7 \text{Border}_{ij} + \beta_8 \text{Lang}_{ij} + \\
+ \delta_{ijt} + \epsilon_t
\]

where \(X_{ijt}\) represents French wine exports flows, by volume, from France (\(i\)) to country \(j\) in year \(t\), in 1913 French francs, \(Y_{it}\), \(Y_{jt}\) are the real GDP of both the exporting country (France) and the importing country, in year \(t\), in 1990 Geary-Khamis US dollars (Maddison, 2001); \(Y_{pcpit}\), \(Y_{pcpjt}\) are the per capita GDP of both the exporting (France) and importing countries, in year \(t\), in 1990 Geary-Khamis US dollars (Maddison, 2001); \(Dist_{ij}\) is the distance between Paris and the capitals of the countries of destination (CEPII database); \(\text{Border}_{ij}\) is a dummy variable which takes the value of 1 if the countries have a common border with France and 0 otherwise; \(\text{Lang}_{ij}\) is a dummy variable which takes the value of 1 if the countries share French language and 0 otherwise. We will also add some dummy variables to control events that could affect French exports as the phylloxera plague, World War I or the depression of the 30s. Lastly, in line with the recent work by Anderson and van Wincoop (2003), the equation includes “multilateral (price) resistance terms”, which are proxied by dummy variables. This article, which has been highly influential in recent studies, demonstrates that the omission of price indices leads to an erroneous specification of the empirical model, which may bias the results. We use country-pair fixed effects \(\delta_{ijt}\) to account for the multilateral price terms (rather than a custom nonlinear least squares program), following the alternative proposed by Feenstra (2004). These variables reflect the effect of all the singularities of the exporting and importing nations that might affect trade between two countries and are not captured by the remaining variables specified in the empirical model. Finally, the model includes the error term \(\epsilon_t\) which is assumed to be log-normally distributed.

French wine export flows were reconstructed annually in volume terms between 1849 and 1938 from French foreign trade statistics. The quantities of wine exported each year to each destination in hectoliters, have been multiplied by their respective price (unit value of exports) in 1913.